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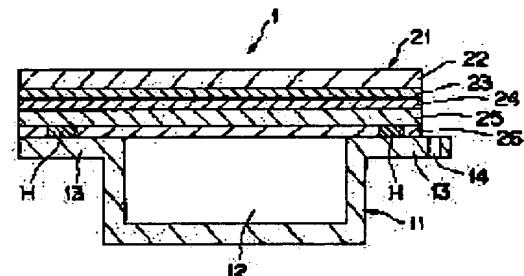
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(54) LID MATERIAL, CARRIER TAPE AND TAPING USING THESE MATERIALS

(57)Abstract:

PURPOSE: To obtain a lid material which has outstanding electrostatic properties and transparency, and further, high separation and adhesion by providing an intermediate layer between an electroconductive heat sealant layer consisting of barium sulfate particles as a main chemical agent and an adjacent biaxially stretched resin layer, and forming the intermediate layer of a resin composition of specific components.

CONSTITUTION: A carrier tape 11 is composed of embossed parts 12 of a specified shape arranged and a flange part 13 formed on both sides of the embossed parts. A lid material 21 consists of a biaxially stretched resin layer 22, and an intermediate layer 25 and a heat sealant layer 26 laminated sequentially on the biaxially stretched resin layer 22 through an adhesive layer 23 and an adhesion layer 24. The intermediate layer 25 is of a multilayer structure for improving a filming accuracy. In addition, the intermediate layer 25 is formed of a resin composition consisting of 30 to 50wt.% of ethylene - olefin copolymer with a density of 0.915 to 0.940g/cm² and 70 to 50wt.% of styrene - butadiene block copolymer consisting of 50 to 90wt.% of styrene and 50 to 10wt.% of butadiene.



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CLAIMS**[Claim(s)]**

[Claim 1] It has a biaxial-stretching resin layer, a heat sealant layer, and the interlayer that adjoins this heat sealant layer and is located between said biaxial-stretching resin layer and said heat sealant layer. Said heat sealant layer is a layer in which the conductive impalpable powder which uses as base resin the barium-sulfate particle which coated the front face with the tin oxide which doped antimony was distributed by thermoplastics. Said middle class is a consistency 0.915 - 0.940 g/cm³. 30 - 50 % of the weight of ethylene-alpha olefin copolymers, Lid material characterized by being formed with the resin constituent which consists of 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers.

[Claim 2] The weight ratio of said conductivity impalpable powder in which said heat sealant layer is constituted, and said thermoplastics is lid material according to claim 1 characterized by being within the limits of 5:5-7:3.

[Claim 3] For said heat sealant layer, surface resistivity is 105-109. Lid material according to claim 1 or 2 characterized by being within the limits of omega/**, and the charge damping time being 1 or less second.

[Claim 4] Said thermoplastics which forms said heat sealant layer is lid material according to claim 1 to 3 characterized by being mixed resin of polyurethane resin and vinyl chloride vinyl acetate copolymer resin.

[Claim 5] the mixing ratio of the polyurethane resin and vinyl chloride vinyl acetate copolymer resin which constitute said heat sealant layer -- the lid material according to claim 4 characterized by the range of a rate being 75:25-85:15.

[Claim 6] The carrier tape characterized by being formed by the polycarbonate which contains a conductive carbon particle in 5 - 30% of the weight of the range, and having two or more embossing sections.

[Claim 7] The carrier tape according to claim 6 characterized by having fabricated the polycarbonate resin sheet which contains a conductive carbon particle in 5 - 30% of the weight of the range with cold forming, and preparing said embossing section.

[Claim 8] It is taping which said carrier tape is a carrier tape according to claim 6 or 7, and is characterized by said lid material being lid material according to claim 1 to 5 in taping which it comes to carry out thermal melting arrival about lid material so that this embossing section may be covered on a carrier tape equipped with two or more embossing sections.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the lid material which starts lid material, a carrier tape, and taping, especially is used for the carrier tape made of polycarbonate resin, and this, and taping which consists of these.

[0002]

[Description of the Prior Art] Electronic parts are contained in each embossing section of the carrier tape on which much embossing was formed, and taping of the embossing carrier mold which carried out thermal melting arrival and sealed lid material (covering tape) on the carrier tape so that the embossing section might be covered is used. The carrier tape used for taping of such an embossing carrier mold is usually formed using a polyvinyl chloride, polystyrene, and an ingredient with easy sheet forming like polypropylene. Moreover, lid material is equipped with the heat sealant layer formed in one field of a biaxial-stretching resin film and this film. And a means to prevent this with static electricity which generates static electricity which the electronic parts contained contact the embossing section of a carrier tape or lid material, and generate, and lid material in case it exfoliates from a carrier tape since there is a danger that degradation of electronic parts and destruction will arise is required of a carrier tape and lid material.

[0003] As a prevention means of static electricity generating in a carrier tape, a conductive carbon particle and a metal particle are scoured in a carrier tape, or applying is performed. Moreover, as a prevention means of static electricity generating in lid material, antistatic agents, such as a surface active agent, a conductive carbon particle, and a metal particle are scoured in the heat sealant layer which contacts electronic parts and directly, or applying is performed.

[0004]

[Problem(s) to be Solved by the Invention] However, in taping of the above conventional embossing carrier molds, a carrier tape and lid material checked the electronic parts with which transparency is very low and is contained by taping of an embossing carrier mold by the conductive carbon particle as a contained antistatic agent from the outside, and had a problem of *****.

[0005] Moreover, when a surfactant was applied, the surface state of the heat sealant layer of lid material changed, and there was a problem that did not become the cause of a poor seal and the antistatic effectiveness which the seal nature of a heat sealant layer became unstable, and was stabilized since the dependency of the static electricity spreading effect by the temperature under storage and humidity was large was not acquired.

[0006] Furthermore, predetermined reinforcement is required so that lid material may exfoliate and omission of electronic parts may not produce the thermal melting arrival of the lid material to a carrier tape during transportation of taping of an embossing carrier mold, and storage. However, when this thermal melting arrival reinforcement was too large, there was a problem that the accident on which a carrier tape vibrates and electronic parts jump out of the embossing section of a carrier tape in the case of exfoliation of the lid material in the mounting process of electronic parts occurred. Therefore, it pasted up by sufficient reinforcement for a carrier tape, and it was required that the detachability at the time of electronic-parts use should have been good, and, for this reason, lid material had the problem that conditioning, such as temperature of heat sealing and time amount, was severe.

[0007] The lid material which prepared the interlayer who consists of polyolefine of either polyethylene, an ethylene vinyl acetate copolymer, an ionomer, polypropylene or those denaturation objects between the biaxial-stretching resin films and heat sealant layers which solve such a problem, and which constitute lid material as a thing is proposed (JP,5-8339,A). Although this lid material can exfoliate between the layers of

an interlayer and a heat sealant layer at the time of exfoliation, it has the problem that adjustment of the peel strength (adhesion force) of an interlayer and a heat sealant layer is not easy.

[0008] Moreover, the polyvinyl chloride used as a carrier tape, polystyrene, and resin like polypropylene had the problem that deformation of a shaping part (embossing section), pitch gap of a feed hole (sprocket hole), etc. occurred, when the carrier tape which be inferior to continuation thermal resistance, and fabricated and obtained these resin sheets be kept from the property of resin itself to an elevated temperature (for example, about 60 - degree C shipment condition). Moreover, generally on the occasion of shaping of a carrier tape, the embossing section formed the part to which the preheating of the above-mentioned resin sheet was carried out with metal mold. However, contraction of a resin sheet and expansion arose at the time of this preheating, the process to the decision of the metal mold dimension for forming the high feed hole (sprocket hole) and the embossing section of dimensional accuracy in consideration of such contraction and expansion was very complicated, and further, when the non-extended part by preheating nonuniformity existed, problems, like a hole opens were also in this part.

[0009] This invention aims at offering taping of the embossing carrier mold which consists of lid material which is made in view of such a situation, and has a heat-resistant carrier tape made of polycarbonate resin, and the outstanding static electricity property and transparency, and combines the high adhesive property to the above-mentioned KIRIA tape, and good detachability, and these carrier tapes and lid material.

[0010]

[Means for Solving the Problem] In order to attain such a purpose, the lid material of this invention A biaxial-stretching resin layer, It has a heat sealant layer and the interlayer who adjoins this heat sealant layer and is located between said biaxial-stretching resin layer and said heat sealant layer. Said heat sealant layer is a layer in which the conductive impalpable powder which uses as base resin the barium-sulfate particle which coated the front face with the tin oxide which doped antimony was distributed by thermoplastics. Said middle class is a consistency 0.915 - 0.940 g/cm³. 30 - 50 % of the weight of ethylene-alpha olefin copolymers, It considered as a configuration which is formed with the resin constituent which consists of 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers.

[0011] Moreover, the carrier tape of this invention was formed by the polycarbonate which contains a conductive carbon particle in 5 - 30% of the weight of the range, and was considered as a configuration which is equipped with two or more embossing sections.

[0012] Furthermore, taping of this invention was taken as a configuration which carried out thermal melting arrival of the above-mentioned lid material so that the embossing section might be covered on the above-mentioned carrier tape.

[0013]

[Function] The resin which forms a carrier tape equipped with two or more embossing sections is the polycarbonate which contains a conductive carbon particle in 5 - 30% of the weight of the range. By this Thermal resistance and an antistatic property are given to this carrier tape. Moreover, lid material A biaxial-stretching resin layer and the heat sealant layer in which conductive impalpable powder was distributed by thermoplastics, This heat sealant layer is adjoined, it is located between a biaxial-stretching resin layer and a heat sealant layer, and they are a consistency 0.915 - 0.940 g/cm³. 30 - 50 % of the weight of ethylene-alpha olefin copolymers, It has the interlayer formed with the resin constituent which consists of 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers. Since the conductive impalpable powder contained in the heat sealant layer is conductive impalpable powder which uses as base resin the barium-sulfate particle which coated the front face with the tin oxide which doped antimony, An antistatic property is given to lid material, without losing the transparency of a heat sealant layer, and between layers with a heat sealant layer, since it can exfoliate, an interlayer can carry out stably [exfoliation of lid material], and certainly regardless of the thermal melting arrival reinforcement of a heat sealant layer and a carrier tape.

[0014]

[Example] Hereafter, it explains, referring to a drawing about the example of this invention.

[0015] Drawing 1 is the perspective view showing an example of the carrier tape of this invention. It sets to drawing 1, and the carrier tape 11 is arranged and equipped with two or more embossing sections 12 of a predetermined configuration, and the flange 13 is formed in the both sides of the array of the embossing section 12. Moreover, the feed hole (sprocket hole) 14 is formed in one side of a flange 13 in the predetermined pitch along the array direction of the embossing section 12.

[0016] The above carrier tapes 11 can fabricate and produce the sheet which consists of polycarbonate resin

which contains a conductive carbon particle in 5 - 30% of the weight of the range. Polycarbonate resin has the description that a malleability deformation region is large compared with the resin currently used for the carrier tape from the former, such as vinyl chloride resin, polystyrene resin, and polypropylene resin. Therefore, the polycarbonate resin containing the above-mentioned conductive carbon particle, especially the melting point can perform shaping of the carrier tape of this invention by the shaping approach which does not contain beforehand the sheet using polycarbonate resin 150 degrees C or more like a heat process, for example, a cold-forming method. In this case, it is desirable for metal mold to consist of a core mold and a cavity mold, to carry out temperature control of the die temperature in 50-200 degrees C, and to install a mold-goods cooling mold at the next process of shaping metal mold. It produces deformation by curvature and stress relaxation, and change of the pitch of a feed hole (sprocket hole) and is not desirable, if continuation thermal resistance becomes inadequate and it is kept by 50 degrees C or more for a long period of time, when the melting point of the polycarbonate resin used for the carrier tape of this invention is less than 150 degrees C. By adopting this cold-forming method, it is not necessary to heat a resin sheet beforehand, it can set to direct metal mold, and the embossing section can be formed. Therefore, conventionally, the process which had determined the metal mold dimension in consideration of contraction of the resin sheet at the time of a preheating and expansion becomes unnecessary, and the formed embossing section becomes what has the very high stability of dimensional accuracy. Furthermore, the antistatic property is given by the conductive carbon particle which thermal resistance is high and is contained since polycarbonate resin is being used for the carrier tape of this invention. The conductive carbon particle to be used has that desirable whose mean particle diameter is about 0.01-0.5 micrometers.

[0017] In the carrier tape 11 of above this inventions, the configuration of the embossing section 12 and a dimension can be suitably set up according to the configuration of the goods held in the embossing section 12 etc. Moreover, thickness of the carrier tape 11 can usually be made into the range of 100-600 micrometers. Furthermore, the diameter and pitch of a feed hole (sprocket hole) 14 can be set as arbitration. Moreover, in the example of illustration, although one flange 13 is formed, a feed hole (sprocket hole) 14 may form a feed hole (sprocket hole) 14 in both flanges 13, or may not equip a flange 13 with the feed hole (sprocket hole).

[0018] Drawing 2 is the outline sectional view of the lid material of this invention. The lid material 21 is equipped with the biaxial-stretching resin layer 22, and the adhesives layer 23, and the interlayer 25 and the heat sealant layer 26 by which the laminating was carried out to the biaxial-stretching resin layer 22 through the glue line 24 at order in drawing 2 .

[0019] The biaxial-stretching resin layer 22 bears heat from the heating means at the time of carrying out thermal melting arrival of the lid material 21 to the carrier tape of above this inventions, and it is required that Siwa should not occur, and the moderate waist is given to the whole lid material, and the operation which makes good the rolling-up fitness of lid material and machine fitness at the time of thermal melting arrival is made. Such a biaxial-stretching resin layer 22 can be formed with biaxially oriented films, such as polyamide resin, such as polyolefin resin, such as polyester resin, such as polyethylene terephthalate (PET), and polypropylene, and nylon. The thickness of the biaxial-stretching resin layer 22 can be suitably set up according to the purpose of using lid material, for example, can be set to about 6-50 micrometers.

[0020] By the glue line 24 formed among this biaxial-stretching resin layer 22 and interlayer 25, in case it heat seals, heat and a pressure can be applied to homogeneity. As a glue line 24, it can form with the polyolefine of either polyethylene, a polyethylene vinyl acetate copolymer, an ionomer, polypropylene or these denaturation objects, and about 10-60 micrometers of thickness are desirable. If a cushion function is bad in the thickness of a glue line 24 being less than 10 micrometers and it exceeds 60 micrometers, heat-sealing nature will fall. The adhesives layer 23 is for raising the lamination reinforcement of the biaxial-stretching resin layer 22 and a glue line 24, and can use adhesives, such as an isocyanate system, an imine system, and an urethane system. Moreover, surface treatment, such as corona treatment, plasma treatment, and sandblasting processing, may be beforehand performed to the field in which the adhesives layer 23 of the biaxial-stretching resin layer 22 is formed if needed, and an adhesive property with the adhesives layer 23 may be raised to it.

[0021] a glue line 24 -- the adhesives layer 23 -- minding -- a biaxial-stretching resin film top -- spreading or extrusion molding -- it can carry out -- this glue line 24 top -- an interlayer 25 -- a dry lamination -- or an extrusion lamination can be carried out.

[0022] In addition, without forming a glue line 24, directly, it can paste up by the adhesives layer 3 and the laminating of the biaxial-stretching resin layer 22 and the interlayer 25 can also be carried out. Also in this case, adhesives, such as an isocyanate system, an imine system, and an urethane system, can be used as an

adhesives layer 23. Moreover, surface treatment, such as corona treatment, plasma treatment, and sandblasting processing, can be beforehand performed to the field in which the adhesives layer 23 of the biaxial-stretching resin layer 22 is formed if needed.

[0023] The middle class 25 is a consistency 0.915 - 0.940 g/cm³. It is formed with the resin constituent which consists of 30 - 50 % of the weight of ethylene-alpha olefin copolymers, and 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers. The ethylene-alpha olefin copolymer used for the middle class's 25 formation is a copolymer of ethylene, and a butene, a pentene, a hexene, a heptene, octene and 4-methyl pentene and 1 grade etc. The consistencies of such an ethylene-alpha olefin copolymer are 0.915 g/cm³. The following or 0.940 g/cm³ When exceeding, the membrane formation nature of the interlayer 25 by combination with a styrene-butadiene block copolymer falls and is not desirable.

[0024] Moreover, if the adhesiveness of a film increases that the amount of styrene which constitutes the styrene-butadiene block copolymer used for the middle class's 25 formation is less than 50 % of the weight, and handling becomes difficult and it exceeds 90 % of the weight, adhesion with the heat sealant layer 26 in low temperature worsens and is not desirable.

[0025] And the mixing ratio of the ethylene-alpha olefin copolymer and styrene-butadiene block copolymer in the middle class 25 affects greatly the peel strength at the time of exfoliating, after carrying out thermal melting arrival of the lid material 21 to the carrier tape which consists of polycarbonate resin, and the transparency of the lid material 21, when the presentation of the heat sealant layer 26 is fixed. When a styrene-butadiene block copolymer exceeds [the amount of ethylene-alpha olefin copolymers] 70 % of the weight less than 30% of the weight, an interlayer's 25 membrane formation nature becomes low, and the transparency of the lid material 21 at the time of an interlayer's 25 transparency also forming the heat sealant layer 26 fallen and mentioned later worsens. Furthermore, the adhesion force of the middle class 25 and the heat sealant layer 26 is discovered with a styrene-butadiene block copolymer, and if what is functioning as an adhesion alienation agent is conjectured and the amount of styrene-butadiene block copolymers exceeds 70 % of the weight as mentioned above, the adhesion force of the middle class 25 and the heat sealant layer 26 is too large, and it exceeds the fitness reinforcement which the peel strength of lid material mentions later and is not desirable [an ethylene-alpha olefin copolymer]. On the other hand, the amount of ethylene-alpha olefin copolymers exceeds 50 % of the weight, when a styrene-butadiene block copolymer is less than 50 % of the weight, the adhesion force of an interlayer 25 and the heat sealant layer 26 is too small, and the peel strength of lid material is not less [proper reinforcement], and desirable. And in order to obtain proper peel strength in the condition that the middle class's 25 amount of ethylene-alpha olefin copolymers exceeds 50 % of the weight in this way, when changing the presentation of the heat sealant layer 26, the transparency of the lid material 21 is made to fall and it is not desirable so that it may mention later.

[0026] The above-mentioned interlayer's 25 thickness usually has desirable about 10-60 micrometers. When an interlayer's thickness is less than 10 micrometers, if membrane formation nature is bad and exceeds 60 micrometers, the thermal melting arrival nature of the lid material 21 will worsen.

[0027] Moreover, for the lid material 21 of this invention, the layer which can make an interlayer 25 multilayer structure and touches the heat sealant layer 26 in this case in order to raise an interlayer's 25 membrane formation precision is a consistency 0.915 - 0.940 g/cm³. It needs to be formed from the resin constituent which consists of 30 - 50 % of the weight of ethylene-alpha olefin copolymers, and 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers.

[0028] Drawing 3 is the outline sectional view showing the example of the lid material of this invention which made the interlayer two-layer structure, and the interlayer 25 consists of 1st resin layer 25a and 2nd resin layer 25b. In this case, 1st resin layer 25a is a consistency 0.915 - 0.940 g/cm³. It is formed with an ethylene-alpha olefin copolymer. And 2nd resin layer 25b which touches the heat sealant layer 26 is a consistency 0.915 - 0.940 g/cm³. It is formed with the resin constituent which consists of 30 - 50 % of the weight of ethylene-alpha olefin copolymers, and 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers. Such thickness of 1st resin layer 25a and 2nd resin layer 25b can be set to about 5-30 micrometers, respectively.

[0029] Drawing 4 is the outline sectional view showing the example of the lid material of this invention which made the interlayer the three-tiered structure, and the interlayer 25 consists of 3rd resin layer 25c prepared between 1st resin layer 25a, 2nd resin layer 25b, and 1st resin layer 25a and 2nd resin layer 25b. In this case, 1st resin layer 25a is a consistency 0.915 - 0.940 g/cm³. It is formed with an ethylene-alpha olefin copolymer. Moreover, 2nd resin layer 25b which touches the heat sealant layer 26 is a consistency 0.915 -

0.940 g/cm³. It is formed with the resin constituent which consists of 30 - 50 % of the weight of ethylene-alpha olefin copolymers, and 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers. And 3rd resin layer 25c is a layer with the mixed large ratio of an ethylene-alpha olefin copolymer from 2nd resin layer 25b. Thickness of such 1st resin layer 25a, 2nd resin layer 25b, and 3rd resin layer 25c can be set to about 3-20 micrometers, respectively.

[0030] The above interlayers 25 can form with a dry lamination process or an extrusion lamination process. Moreover, an interlayer 25 can form by the usual film forming-membranes methods, such as a tubular film process and a T-die method.

[0031] In case the lid material 21 by which thermal melting arrival was carried out to the carrier tape made of polycarbonate resin when the lid material 21 of this invention possessed the above middle class 25 is exfoliated, exfoliation arises between the layers of the middle class 25 and the heat sealant layer 26. The peel strength in this case is weaker than the thermal melting arrival reinforcement of the heat sealant layer 26 and the carrier tape made of polycarbonate resin which are mentioned later, and it is desirable that it is the range of 100-800g / 15mm. If peel strength is set to 100g / less than 15mm, in case the container after carrying out thermal melting arrival of the lid material will be transported, exfoliation arises between the layers of an interlayer 25 and the heat sealant layer 26, and there is a danger that contents will drop out. Moreover, it is [a possibility that the carrier tape made of polycarbonate resin may vibrate, and contents may jump out in the case of exfoliation of lid material] and is not desirable if peel strength exceeds 800g / 15mm. In addition, the above-mentioned peel strength is the value of 180-degree exfoliation under 23 degrees C and 40%RH ambient atmosphere (exfoliation rate = a part for 300 mm/).

[0032] Therefore, the lid material 21 can exfoliate certainly from the carrier tape made of polycarbonate resin, after it made sufficiently high thermal melting arrival reinforcement to the carrier tape made of polycarbonate resin by the heat sealant layer 26 and it carries out thermal melting arrival.

[0033] The heat sealant layer 26 which constitutes the lid material 21 of this invention is a layer in which the conductive impalpable powder which uses as base resin the barium-sulfate particle which coated the front face with the tin oxide which doped antimony was distributed by thermoplastics.

[0034] The mixed resin of polyurethane resin and vinyl chloride vinyl acetate copolymer resin of the thermoplastics used for the heat sealant layer 26 is desirable, and, as for a mixed ratio, it is desirable to consider as the range of 75:25-85:15. the mixing ratio of the above [the amount of polyurethane resin] -- when fewer than a rate, the viscosity of a mixed resin constituent increases, spreading formation of a heat sealant layer becomes difficult, and the adhesion force with the above-mentioned interlayer 25 is too large, and peel strength exceeds the above-mentioned proper peel strength (100-800g / 15mm) and is not desirable. On the other hand, when there are more amounts of polyurethane resin than the above-mentioned mixed ratio, peel strength will be less than the above-mentioned proper peel strength (100-800g / 15mm), and is not desirable. As the above-mentioned polyurethane resin, NIPPORAN 5120 made from Japanese Polyurethane Industry and KL494 grade made from Arakawa Chemistry are mentioned. Moreover, as vinyl chloride vinyl acetate copolymer resin, the Union Carbide vinylite VAGH, Vinylite VACH, Vinylite VACA, etc. are mentioned.

[0035] Having used the conductive impalpable powder which uses as base resin the barium-sulfate particle which coated the front face with the tin oxide which doped antimony as conductive impalpable powder which the heat sealant layer 26 is made to contain is based on the following reasons. Common tin-oxide system conductivity impalpable powder is simple substance powder which transposed the oxygen atom of a tin-oxide molecule to the antimony atom by the ion doping method. For this reason, particle diameter is 0.15 micrometers or less, and is advantageous in respect of the transparency of a heat sealant layer. However, although contact of conductive impalpable powder must be made to increase and it is necessary to make [many] the addition of the conductive impalpable powder in a heat sealant layer in order to give sufficient conductivity for a heat sealant layer, since the tin oxide which doped antimony is comparatively expensive, increase of the manufacturing cost of lid material will be caused. On the other hand, in some which coated the barium-sulfate particle with the above-mentioned tin oxide, particle diameter is as large as 0.15-1.5 micrometers, and there are few additions of the conductive impalpable powder for giving sufficient conductivity for the part and a heat sealant layer, and since the cost of conductive impalpable powder is also cheap, there is [it ends and] an advantage that reduction of the manufacturing cost of lid material is possible.

[0036] Thus, the mean particle diameter of the conductive impalpable powder used for the heat sealant layer 26 of this invention is an about 0.15-1.5-micrometer thing as a primary particle, and, as for the weight ratio

of the conductive impalpable powder and thermoplastics in the heat sealant layer 26, it is desirable that it is within the limits of 5:5-7:3: If the amount of conductive impalpable powder increases more than the above-mentioned range, the transparency of a heat sealant layer worsens, and peel strength exceeds the above-mentioned proper peel strength (100-800g / 15mm) and is not desirable. On the other hand, if there are few amounts of conductive impalpable powder than the above-mentioned range, the surface resistivity and the charge damping time to which peel strength is less than it and mentions the above-mentioned proper peel strength (100-1200g / 15mm) later will be acquired.

[0037] In addition, especially the thickness of the heat sealant layer 26 has the desirable range of 0.8-2 micrometers 0.5-5 micrometers.

[0038] The surface resistivity sets under 22 degrees C and 40%RH, and such a heat sealant layer 26 is 105-109. It is within the limits of omega/**, and the charge damping time taken to decrease 99% from 5000V under 23**5 degrees C and 12**3%RH is 1 or less second, and it has the outstanding static electricity property. The above-mentioned surface low effectiveness is 109. When omega/** is exceeded, the static electricity spreading effect gets extremely bad, and it becomes difficult to protect electronic parts from the static electricity destruction, and it is 105. When it becomes under omega/**, the electrical and electric equipment may energize from the exterior to electronic parts through lid material, and there is a danger that electronic parts will be destroyed electrically. On the other hand, when the charge damping time which is the standard of the diffusion rate of the charge generated with static electricity exceeds 1 second, the static electricity spreading effect gets extremely bad, and it becomes difficult to protect electronic parts from the static electricity destruction. In addition, above-mentioned surface resistivity and the above-mentioned charge damping time can be measured based on MIL-B-81705C which is U.S. Military Standard.

[0039] The heat sealant layer 26 can be made to contain additives, such as a distributed stabilizer, a surface active agent, and an antiblocking agent, if needed.

[0040] Spreading formation of such a heat sealant layer 26 can be carried out on the middle class 25 by the coating approaches, such as the air doctor coat method, the blade coat method, the knife coat method, the rod coat method, the direct roll coat method, the reverse roll coat method, the gravure coat method, the slide coat method, and the slot cage philharmonic coat method.

[0041] As for the above lid material of this invention, total light transmission has transparency from which 70% or more and a haze value become 75% or less. Therefore, the embossing section of the carrier tape which consists of polycarbonate resin is filled up with contents, and after carrying out the lid material 21 thermal melting arrival and sealing it, the existence of contents and a restoration condition can be inspected and checked by viewing.

[0042] And since exfoliation produces the lid material 21 of this invention between the layers of the middle class 25 and the heat sealant layer 26, it has the detachability ability stabilized without being influenced by the thermal melting arrival conditions to the carrier tape which consists of polycarbonate resin.

[0043] Next, an example of taping of the embossing carrier mold of this invention is shown and explained to drawing 5 and drawing 6, and interlaminar peeling [like] is explained to **** [in / for this taping / the lid material of this invention] with reference to drawing 7 at an example. The taping 1 of the embossing carrier mold of this invention with which the lid material 21 as shown in the carrier tape 11 equipped with the embossing section 12 as shown in drawing 1 at drawing 2 was carried out thermal melting arrival, and was constituted is shown in drawing 5 and drawing 6. By this taping 1, after piling up the lid material 21 on the carrier tape 11 so that the feed hole (sprocket hole) 14 of the carrier tape 11 may not be closed, thermal melting arrival is performed to the both ends of the embossing section 12 in the shape of Rhine by predetermined width of face. In the example of illustration, the slash section has shown the Rhine-like thermal melting arrival part H. In this condition, the range of the adhesion reinforcement of the interlayer 25 of the lid material 21 and the heat sealant layer 26 is 100-800g / 15mm, and it is small from the thermal melting arrival reinforcement of the heat sealant layer 26 and the carrier tape 11. Next, if the lid material 21 is exfoliated from the carrier tape 11, in the Rhine-like thermal melting arrival part H, thermal melting arrival of the heat sealant layer 26 will be carried out to the carrier tape 11, and exfoliation will produce it between the layers of an interlayer 25 and the heat sealant layer 26. Therefore, the lid material 21 exfoliates, where the Rhine-like thermal melting arrival part H is left on a carrier tape among the heat sealant layers 26. That is, the lid material 21 of this invention has the opposite property [say / the high thermal melting arrival nature to the carrier tape 11, and the easy detachability at the time of exfoliation].

[0044] Next, a concrete example is shown and this invention is further explained to a detail.

(Example) As a biaxial-stretching resin layer, the biaxial-stretching polyethylene terephthalate (PET) film (12 micrometers in S pet 6140 by Toyobo Co., Ltd. and thickness, corona treatment article) was prepared.

[0045] Moreover, the isocyanate system 2 liquid hardening mold adhesives for dry laminates (bamboo NETO A50 by Takeda Chemical Industries, Ltd., bamboo rack A515) were prepared as an object for adhesives layers.

[0046] in order [next,] to form the middle class -- the following line as an ethylene-alpha olefin copolymer -- the following S-B copolymer was prepared as a low density polyethylene (L-LDPE) and 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block (S-B) copolymer, and the monolayer film was obtained by the tubular film process.

[0047] L-LDPE:Mitsui Petrochemical Industries, Ltd. make -- ULTZEX 3550A consistency =0.925 g/cm³ S-B copolymer: -- Asa FREX 810 by Asahi Chemical Industry Co., Ltd. -- in order to form a heat sealant layer, the conductive impalpable powder which uses as base resin the barium-sulfate particle which coated the front face with the following polyurethane resin, vinyl chloride vinyl acetate copolymer resin, and the tin oxide that doped antimony was prepared again.

[0048] polyurethane resin: -- product made from Japanese Polyurethane Industry NIPPORAN 5120 vinyl-chloride-vinyl-acetate-copolymer resin: -- Union Carbide vinylite VAGH conductivity impalpable powder: -- Mitsui Mining and Smelting Co., Ltd. make Pasto Laon IV mean-particle-diameter =0.3micrometer -- next The dry lamination of the interlayer (30 micrometers in thickness) produced on the mixed conditions of the L-LDPE and the S-B copolymer which are first shown in the following table 1 on the adhesives layer formed in the PET film was carried out using such each ingredient, and the film of PET / adhesives layer / interlayer was obtained. Then, the heat sealant layer (2 micrometers in thickness) of the presentation shown in the following table 1 was formed by the gravure reversing method on the middle class, and lid material (samples 1-13) was created.

[0049]

[Table 1]

表 1

蓋材	中間層の組成		ヒートシーラント層の組成		
	L-LDPE	S-B 共重合体	ポリウレタン樹脂	塩酢ビ共重合体	導電性微粉末
試料 1	40	60	79	20	150
試料 2	40	60	79	20	220
試料 3	40	60	79	20	100
試料 4	40	60	75	25	150
試料 5	40	60	85	15	150
試料 6	50	50	79	20	150
試料 7	30	70	79	20	150
試料 8	40	60	79	20	240
試料 9	40	60	79	20	95
試料 10	40	60	70	30	150
試料 11	40	60	90	10	150
試料 12	70	30	79	20	150
試料 13	20	80	79	20	150
比較 試料 1	40	60	75	25	300

*表 1 中の数値は重量部を示す。

*塩酢ビ共重合体：塩化ビニル-酢酸ビニル共重合体を示す。

Moreover, the following conductive carbon particle was used as conductive impalpable powder which a heat sealant layer is made to contain, and also the comparison sample 1 as well as the sample 1 of the above-mentioned table 1 was created.

[0050] Conductive carbon particle: Product made from size ***** Pudding tex XE2 mean particle diameter = total light transmission, surface resistivity, and the charge damping time were measured on condition that the following whenever [haze] about 0.4 micrometers, next each above-mentioned lid material (samples 1-13, comparison sample 1). Moreover, a heat-sealing bar is used for the polycarbonate resin base material (Bayer micro hole KL 3-1011) containing a conductive carbon particle (0.03 micrometers of mean diameters) for each above-mentioned lid material, and they are 180 degrees C, 0.5 seconds, and 3.0 kgf/cm². Thermal melting arrival was carried out on conditions, and peel strength was measured on condition that the following after that.

(Measuring condition of whenever [haze], and total light transmission) It measured in color computer SM [by Suga Test Instruments Co., Ltd.]-5SC.

(Measuring condition of surface resistivity) It measured by Huy Lester IP by Mitsubishi Petrochemical Co., Ltd. under 22 degrees C and 40%RH.

(Measuring condition of the charge damping time) The time amount taken to decrease 99% from 5000V under 23**5 degrees C and 12**3%RH is based on MIL-B-81705C, and it is STATIC DECAY METER-406C made from ETS (Electro-Tech Systems, Inc). It measured.

(Measuring condition of peel strength) the bottom of 23 degrees C and 40%RH -- setting -- made in Oriental Baldwin -- tensilon universal testing machine HTH-100 It measured. (Exfoliation rate = part 180-degree exfoliation for 300 mm/)

The measurement result and exfoliation gestalt of the above-mentioned item about each lid material were shown in the following table 2.

[0051]

[Table 2]

表 2

蓋材	ヘーズ度 (%)	全光線透 過率(%)	表面抵抗率 (Ω)	電荷減 衰時間 (秒)	剥離強度 (g 15mm)	剥離形態
試料 1	40	90	10 ⁸	0.1	400	層間剥離
試料 2	72	76	10 ⁶	0.1	750	層間剥離
試料 3	20	92	10 ⁹	0.1	120	層間剥離
試料 4	40	90	10 ⁸	0.1	300	層間剥離
試料 5	40	90	10 ⁸	0.1	800	層間剥離
試料 6	45	76	10 ⁸	0.1	250	層間剥離
試料 7	35	90	10 ⁸	0.1	750	層間剥離
試料 8	80	80	10 ⁸	0.1	900	層間剥離
試料 9	30	92	10 ¹⁰	1.2	50	層間剥離
試料 10	40	88	10 ⁸	0.1	90	層間剥離
試料 11	40	88	10 ⁸	0.1	820	層間剥離
試料 12	30	91	10 ⁸	0.1	90	層間剥離
試料 13	80	74	10 ⁸	0.1	800	層間剥離
比較試 料 1	85	5	10 ⁶	0.1	600	層間剥離

* 剥離形態…層間剥離：中間層とヒートシーラント層との界面で剥離が生
じ、基材にヒートシーラント層が残る形態。

As shown in Table 2, samples 1-7 were equipped with good transparency and the static electricity property, and exfoliation produced them between the layers of an interlayer and a heat sealant layer in moderate peel strength.

[0052] On the other hand, a sample 8 has a little many contents of the conductivity impalpable powder of a heat sealant layer, since a sample 9 has a little few contents of conductive impalpable powder conversely, whenever [haze] exceeds 75%, transparency is inadequate, and, as for a sample 8, peel strength was less than proper reinforcement, as for the sample 9, the charge damping time exceeded [surface resistivity] 1 second more than 1010ohms / ** further, and the electrical property was also falling. Moreover, since a sample 11 had a little few amounts of polyurethane resin, the sample 10 was less than proper peel strength, the sample 11 had the high viscosity of sealant ink, and coating operability was conversely bad [the sample 10 / there are a little many amounts of polyurethane resin of a heat sealant layer, and]. Furthermore, since a sample 12 had a little much L-LDPE of an interlayer, it was less than proper peel strength, and the compatibility with L-LDPE worsened by gelation of styrene at the time of membrane formation of a S-B copolymer, and the hole vacancy had generated it. On the other hand, since a sample 13 had a little little L-LDPE, whenever [haze] exceeded 75% and transparency was getting worse.

[0053] Moreover, the total light transmission of the comparison sample 1 was inadequate, and its transparency was [whenever / haze] low.

[0054]

[Effect of the Invention] Since the carrier tape equipped with two or more embossing sections is formed by the polycarbonate which contains a conductive carbon particle in 5 - 30% of the weight of the range according to this invention as explained in full detail above The heat sealant layer which a carrier tape possesses a good antistatic property, and is excellent in thermal resistance, and its stability of dimensional accuracy is high, and constitutes lid material The conductive impalpable powder which uses as base resin the barium-sulfate particle which coated the front face with the tin oxide which doped antimony is the layer distributed by thermoplastics. While lid material holds transparency by this heat sealant layer, it has a good antistatic property. Moreover, the interlayer who adjoins a heat sealant layer and is located between a biaxial-stretching resin layer and a heat sealant layer A consistency 0.915 - 0.940 g/cm³ 30 - 50 % of the weight of ethylene-alpha olefin copolymers, Since it is formed with the resin constituent which consists of 70 - 50 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene-butadiene block copolymers, In taping which carried out lid material thermal melting arrival, and formed it in the above-mentioned carrier tape so that the embossing section might be covered When exfoliating lid material, while exfoliation arose between the layers of an interlayer and a heat sealant layer and this had maintained the adhesive property with a high heat sealant layer, good detachability can be acquired and a setup of the thermal melting arrival conditions of the carrier tape made of polycarbonate resin and lid material becomes easy.

[Translation done.]

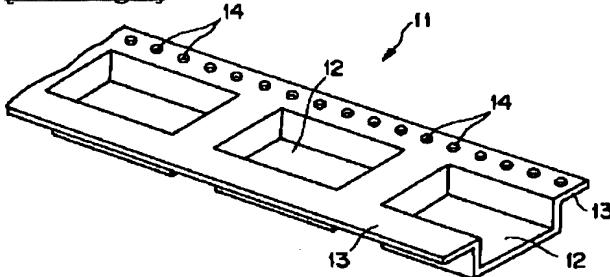
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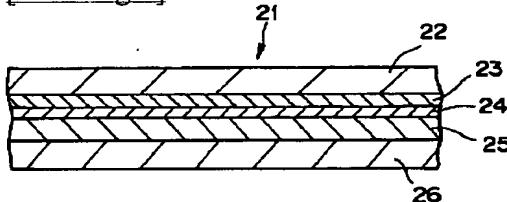
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

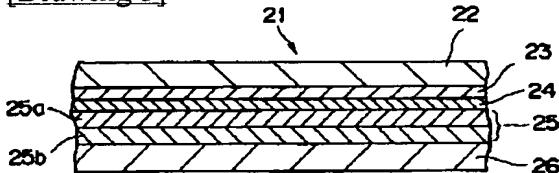
[Drawing 1]



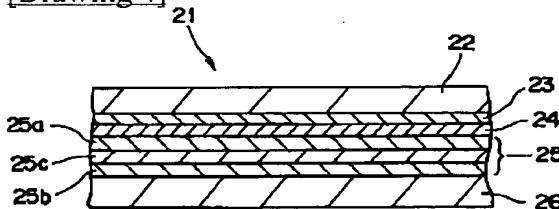
[Drawing 2]



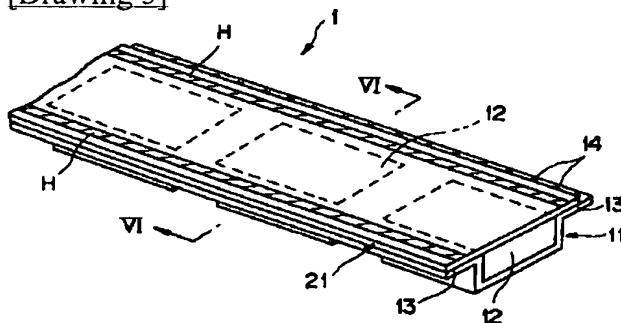
[Drawing 3]



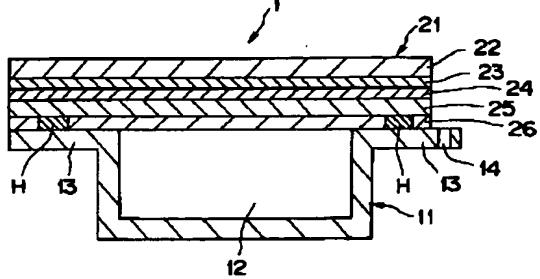
[Drawing 4]



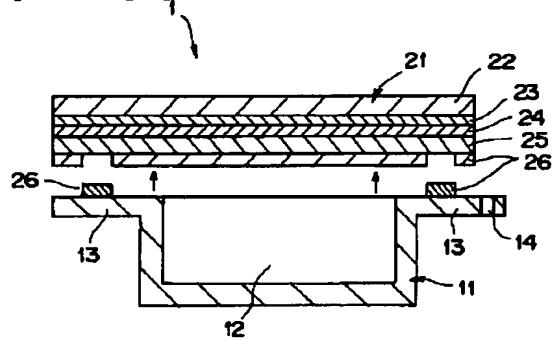
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]